## AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

### Listing of Claims:

1. (currently amended): A method of producing a thick nonlinear optical grating [[(2)]] with a thickness of several hundred microns from an initial thick nonlinear optical grating [[(1)]], the thickness [[($E_2$)]] of the nonlinear optical grating [[(2)]] being greater than the thickness [[($E_0$)]] of the initial nonlinear optical grating [[(1)]], said initial grating comprising at least one plurality of mutually parallel plane layers [[(20)]], said layers having at least two nonlinear coefficients having algebraically different values, said initial grating having a first face [[(11)]] and a second face [[(12)]] that are approximately parallel to each other and approximately perpendicular to the mean plane of the layers, and said second face [[(12)]] being free, comprising ~~characterized in that it comprises the following production steps~~:

[[•]] a first step of determining the thickness [[($E_{01}$, $E_{02}$)]] of that upper part of the initial grating [[(1)]] which lies beneath the second face [[(12)]], which upper part has structural imperfections;

[[•]] a second step of polishing the second face [[(12)]] of said initial grating [[(1)]], making it possible to remove the upper part having said imperfections and to obtain a polished and plane third face [[(13)]], said face approximately perpendicular to the mean plane of the layers [[(20)]];

[[•]] a third step of cleaning and checking said third face [[(13)]]; and

[[•]] at least a fourth step of epitaxially depositing at least one layer [[(1a, 1b)]] of material deposited on said third face [[(13)]], the epitaxial growth reproducing, in said deposited layer, a structure similar to that of the initial grating, the combination of the initial grating [[(1)]] and said deposited layer [[(1a, 1b)]] constituting the nonlinear optical grating [[(2)]].

2. (currently amended): The method of producing an optical grating [[(2)]] as claimed in claim 1, ~~characterized in that~~ wherein the means of determining the thickness having imperfections are optical display devices.

3. (currently amended): The method of producing a nonlinear optical grating [[(2)]] as claimed in ~~either of the preceding~~ claim[[s]] 1, ~~characterized in that~~ wherein after the second production step, the thickness [[($E_1$)]] of the initial optical grating is at least 50 microns.

4. (currently amended): The method of producing a nonlinear optical grating [[(2)]] as claimed in claim 1, ~~characterized in that~~ wherein the initial nonlinear optical grating [[(1)]] is supported by a seed substrate [[(3)]] having a lower face [[(14)]] and a plane upper face [[(11)]], the upper face [[(11)]] of the seed substrate coinciding with the first face [[(11)]] of said initial nonlinear optical grating [[(1)]].

5. (currently amended): The method of producing a nonlinear optical grating [[(2)]] as claimed in claim 4, ~~characterized in that~~ wherein the seed substrate [[(3)]] comprises a crystalline material having a first crystal orientation, the upper face [[(11)]] of the seed substrate having a thin structure, said structure being formed from a precursor grating of parallel bands of the same crystalline material but of the opposite orientation to that of the seed substrate [[(3)]].

6. (currently amended): The method of producing a nonlinear optical grating [[(2)]] as claimed in claim 5, ~~characterized in that~~ wherein the thickness of the seed substrate [[(3)]] is at least 300 microns.

7. (currently amended): The method of producing an optical grating [[(2)]] as claimed in claim 4, ~~characterized in that~~ wherein [[the]] said second ~~production~~ step ~~includes~~ comprises the following preliminary steps:

[[•]] a first preliminary step of polishing the lower face [[(14)]] of the substrate; and

[[•]] a second preliminary step of bonding at least said lower face [[(14)]] to at least one plane support [[(32)]], the fitting of the support making it easier to handle the initial optical

grating [[(1)]] for the subsequent polishing operations.

8. (currently amended): The method of producing a nonlinear optical grating [[(2)]] as claimed in claim 4, ~~characterized in that~~ wherein the initial nonlinear optical grating [[(1)]] is obtained by the epitaxial growth method called HVPE (hydride vapor phase epitaxy) on the upper face of the seed substrate [[(3)]].

9. (currently amended): The method of producing an optical grating [[(2)]] as claimed in claim 1, ~~characterized in that~~ wherein the method of producing the initial nonlinear optical grating [[(1)]] ~~includes~~ comprises the following substeps:

[[•]] a first substep of producing a stack of crystalline plates [[(21)]] having plane parallel faces, of the same material, of small thickness and of periodically alternating crystal orientation; and

[[•]] a second substep of assembling said crystalline plates so as to obtain a single monolithic assembly [[(1)]] constituting the initial optical grating, said initial grating having a first face [[(11)]] and a second face [[(12)]] that are approximately perpendicular to the mean plane of the crystalline plates.

10. (currently amended): The method of producing an optical grating as claimed in claim 9, ~~characterized in that~~ wherein [[the]] said second step in the production of the initial grating [[(2)]] is preceded by the following preliminary steps:

[[•]] a first preliminary step of polishing the first face [[(11)]] of the monolithic stack; and

[[•]] a second preliminary step of bonding at least said first face [[(11)]] to at least one plane support [[(32)]], the fitting of the support making it easier to handle the monolithic assembly for the subsequent operations of polishing the second face [[(12)]].

11. (currently amended): The method of producing an optical grating [[(2)]] as claimed in ~~one of the preceding~~ claim[[s]] 1, ~~characterized in that~~ wherein, during [[the]] said fourth ~~production~~ step, at least two layers [[(1a, 1b)]] of materials of different optical index are

deposited so as to form an optical waveguide.

12. (currently amended): The method of producing a nonlinear optical grating [[(2)]] as claimed in ~~one of the preceding~~ claim[[s]] 1, ~~characterized in that~~ wherein during [[the]] said fourth ~~production~~ step, at least one of the layers [[(1a, 1b)]] is obtained by the epitaxial growth method called OMCVD (organometallic chemical vapor deposition) or by MBE (molecular beam epitaxy).

13. (new): The method of producing a nonlinear optical grating as claimed in claim 2, wherein after [[the]] said second ~~production~~ step, the thickness of the initial optical grating is at least 50 microns.